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10/501,787

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EXAMINER

MULLINS, BURTON S

ART UNIT

PAPER NUMBER

2834

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
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3 MONTHS

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/501,787

Applicant(s)

MIYAMOTO ET AL.

Examiner

Burton S. Mullins

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 November 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. Three sheets of replacement drawings were received on 22 November 2006. These drawings are not approved because they lack the --Prior Art—legend. As noted in the previous action, Figs.4-6 illustrate only that which is old. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The objections to the disclosure have been withdrawn.

Claim Objections

3. Claims 2 and 6 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from a multiple dependent claim. See MPEP § 608.01(n). In claim 2, the phrase “sub-divisions of the armature blocks” lacks antecedent basis and has not been defined. The term will be taken to mean that each armature block comprises a number of pieces or “sub-divisions”, the number of “sub-divisions” being the same for all the blocks such that the formula for determining the spacing is definite. In claim 6, the phrase

“wherein the magnetic field is generated by a yoke” is not idiomatic. Within the context of the claim, it appears that the magnetic field is created or “generated” by the permanent magnets.

The yoke serves to direct the field.

Claim Rejections - 35 USC § 102

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 1 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Kawada (JP 2001-275336). Kawada teaches an armature of a linear motor comprising: a modular-type armature 4 which is divided into a plurality of armature blocks 10/20/30 (Figs.1&2) and around which an armature winding 57/58/59 is coiled (Figs.1-2&5), a plurality of the armature blocks 10/20/30 being formed by sequentially coupling a plurality block cores (4A/4B; Fig.3), and connectors 50 to be used for electrically connecting lead wires (not numbered, see Fig.5) of armature windings 57/58/59 coiled around the armature blocks provided on both ends of a plurality of the armature blocks (Fig.5) so that connections of the respective armature blocks and connections of the armature windings 57/58/59 become serial or parallel (Fig.5), wherein the connectors provided between the armature blocks are connected in a form of in-phase connections, e.g. coils 54/57, 55/58 and 56/59 are connected in phase, respectively (Fig.5). The phrase “connections of the armature windings become serial or parallel” has been interpreted in the exclusive sense to mean that either serial or parallel connections between the windings are provided.

Regarding claim 5, note an armature mount plate 11 (Fig.3) which is arranged in the direction of thrust of the linear motor, i.e. along the longitudinal axis, and provides a retaining function (for the coils) provided on each of the armature blocks, and an engagement projection 7 provided at one end of each armature mount plate 11 (Fig.3), wherein an engagement groove 17 (or 27) is formed in the other end of the same to couple together the armature blocks (Figs.2&3).

Claim Rejections - 35 USC § 103

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claims 2-4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawada (JP 2001-275336) in view of Saito et al. (JP 03-135357). Kawada teaches that there are three coils on each block 20 (Figs.1-2) and further that each block is separated (by a gap corresponding to the air gap between the individual poles in Fig.3). Kawada further teaches permanent magnets (not shown) which inherently possess a magnetic pole pitch.

Kawada does not give a relation between block separation as “intervals corresponding to an electrical angle of an integral multiple determined by dividing the magnetic pole pitch by the number of sub-divisions of the armature blocks” [sic].

Saito teaches a permanent magnet linear motor including three armature blocks 2 (Fig.4) connected together, with permanent magnets having a pole pitch L. The blocks are spaced from each other such that their brush/core centers are separated from each other by L/3. This arrangement enables thrust to be obtained from force generated by conduction of two phases (abstract).

It would have been obvious to modify Kawada and provide separation between the blocks based on the pole pitch per Saito since this would have allowed for thrust to be obtained from force generated by conduction of two phases.

Regarding claims 3-4, where the general features of a claim, i.e., block separation, are disclosed in the prior art, changes in size or range thereof have been held to involve ordinary engineering design. In re Reven, 156 USPQ 679 (CCPA 1968).

Regarding claim 6, Kawada teaches a magnetic field disposed so as to oppose the armature by way of a gap (see US 2002/0047232 A1, paragraph 2), wherein the magnetic field is “generated by a yoke” (magnetic plate, US 2002/0047232 A1, paragraph 2), and a plurality of permanent magnets disposed on the yoke (US 2002/0047232 A1, paragraph 2) and the magnetic field (of the moving element) is taken as a movable element which moves, and the other (the armature) is taken as a stator. Kawada does not explicitly teach that that different polarities of the magnets are arranged alternately.

Saito teaches magnets 1 arranged alternately to provide magnetic interaction between the armature and movable element (Fig.4). It would have been obvious to provide alternating magnets on Kawada’s movable element per Saito since this would have provided magnetic interaction between the armature and movable element.

Response to Arguments

8. Applicant's arguments filed 22 November 2006 have been fully considered but they are not persuasive. Applicant argues that the limitation of “connectors to be used for electrically connecting lead wires of armature windings...so that connections of the respective armature

blocks and connections of the armature windings become serial or parallel” in claim 1 is interpreted to mean that both parallel and serial connections can be provided. It is noted that the feature upon which applicant relies, i.e. “both parallel and serial connections can be provided”, is not recited in the rejected claim. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). The claim language is interpreted broadly in an exclusive sense, i.e. “connections of the armature windings become serial or parallel” is taken to mean that either a serial or a parallel connection exists.

Regarding the “in-phase connection” limitation, the claim language is given the broadest reasonable interpretation consistent with the specification. Thus, an “a form of in-phase connections” in claim 1 is taken to mean that the coils of the different blocks are connected in-phase. Kawada meets this limitation since the phase A coil 54 in one block is connected to the phase A coil 57 in the second block, the phase B coil 55 is connected to the phase B coil 58, and the phase C coil 56 is connected to the phase C coils 59 as seen in Fig.5.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Burton S. Mullins whose telephone number is 571-272-2029. The examiner can normally be reached on Monday-Friday, 9 am to 5 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Burton S. Mullins
Primary Examiner
Art Unit 2834

bsm
03 January 2007